SASKATCHEWAN RESEARCH COUNCIL 2003/2004 ANNUAL REPORT

Impacting Your World

SRC

smart science solutions

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Saskatchewan Research Council Core Values . . . . . *Inside Back Cover*

SRC's Mission

SRC's mission is to help the people of Saskatchewan strengthen the economy with quality jobs and a secure environment. We do it through research, development, and the transfer of innovative scientific and technological solutions, applications and services.

SRC's Vision

SRC will be an internationally recognized leader in the development and implementation of relevant science and technology. We are committed to use this strength to enable our customers to thrive in the world economy, and to benefit Saskatchewan.

SRC's Purpose

SRC creates wealth through the responsible application of science and technology to assist Saskatchewan industry to be globally competitive.

We create wealth through

i) increasing production (of goods and services)
ii) adding value (to goods and services)
iii) improving productivity
iv) creating and commercializing new products and services

The Research Council Act

Section 21 (2) directs that:
Every report shall be laid before the Legislative Assembly in accordance with *The Tabling of Documents Act, 1991*.

104-06785/

Letter of Transmittal

June, 2004

Letter of Transmittal

To the Honourable Lynda Haverstock
Lieutenant Governor of Saskatchewan

May it please your Honour:

The undersigned presents, herewith, for your consideration, the report of the Saskatchewan Research Council for the year ended March 31, 2004.

Respectfully submitted,

Eric Cline
Minister Responsible for SRC

Message from the Chair

The Saskatchewan Research Council's accomplishments in 2003-2004 show that SRC is meeting its corporate mission to help the people of Saskatchewan strengthen the province's economy and create wealth and an improved quality of life.

We need only look at the role SRC's Bova-Can Laboratories played in responding to the BSE, or Mad Cow, crisis. BSE undermined the livelihood of Saskatchewan producers and threatened the provincial economy. It also had economic ripples that spread throughout the world. We were able to play an important role in the fight to contain the disease, reducing the impacts of the crisis. Saskatchewan business is broader than Saskatchewan, and SRC is helping our customers succeed in the world economy.

This is one example of our many products and services which are Impacting Your World, the theme of this year's annual report. A report of this nature can only provide some highlights of the year's activities and in no way provides a detailed accounting of the full array of services, and impacts, that SRC delivers.

SRC's Board of Directors takes pride in a growing organization that involves the close collaboration of management, our team of researchers, and a diverse support staff. They deserve the credit for our reputation at home and abroad as providers of outstanding research services in agriculture, biotechnology, energy, mining and minerals, environmental services, and manufacturing/value-added processing.

Our success at SRC is also a product of partnerships. In particular, we value every opportunity to collaborate with businesses and communities in providing Smart Science Solutions, innovations that grow the economy. SRC also values opportunities to work with research partners, such as the Universities of Saskatchewan and Regina. Finally, we rely on public and private funding agencies to play a critical role in facilitating applied research, development, and innovation.

By enhancing and expanding our team at SRC, as well as the scope and range of our partnerships, we are positioning our organization to make even stronger contributions to the prosperity and well being of Saskatchewan people and, increasingly, to bring worldwide attention to Saskatchewan capabilities.

I would like to take this opportunity to invite businesses—both large and small, in Saskatchewan and beyond—to meet with our team at SRC. Together, we can find ways to develop technical innovations and Smart Science Solutions that meet your company's needs, so that you can expand business opportunities and increase profitability.

Keith Hanson

Keith Hanson
Chair, Board of Directors

Message from the President

I am pleased to report that SRC has completed the second year of its five-year strategic plan on target. The size and scope of our activities and, more importantly, our economic impacts, have continued to expand. Internally, we are committed to continuous improvement, working towards best practices in areas such as safety, customer service, and business continuity. Externally, we are extending our reach beyond applied research and proof of concept, into pilot-scale development, design, and demonstration. These stages are necessary to generate commercial innovations.

As Saskatchewan's lead provider of applied research and technology commercialization, we contribute to economic growth. We work with over 1200 Saskatchewan clients per year, from Saskatchewan's largest companies to its smallest, plus many more from around the world.

In the past year SRC's activities enabled our business community to create or maintain close to 400 Saskatchewan jobs, and contributed more than $58 million in direct Saskatchewan economic impacts. These impacts are achieved by efficiently using our provincial investment to lever additional external funds and by working with the business sector to provide the applied research, development, demonstration, and technology transfer they need to grow their businesses.

Sustainability, resource utilization efficiency, and mitigating adverse environmental impacts are increasingly characteristic of SRC's activities. Examples abound:

- energy efficiency programs launched by the Office of Energy Conservation,
- oilfield projects, like Vapex, that enhance water and energy conservation while reducing greenhouse gas emissions,
- advances in understanding the impacts of climate change and use of that knowledge to help customers and partners focus on adaptation,
- working with industry on air emissions, and process and tailings water technologies,
- partnering with Aboriginal communities on groundwater use, and
- developing the world's first hydrogen/diesel truck, creating technology that could enable the use of hydrogen as a cleaner, alternative fuel.

Saskatchewan's growing business strength also benefits, and attracts, businesses beyond the province. An example of our growing national and international reputation is Titanium Corporation's decision to co-locate its new pilot/demonstration mineral sands processing plant with SRC.

Our successes are the result of exemplary achievements by dedicated people, working closely with our many partners and clients. I want to express my deepest appreciation to everyone at SRC for their contributions to "Impacting Your World." I also thank our many customers and partners for their support and commitment to mutual success—our success comes from your success.

Laurier Schramm
President and Chief Executive Officer

Board of Directors

Back from left to right: Larry Cooper, Mike Monea, Keith Hanson, Laurier Schramm, John Bennett, Patsy Gilchrist, Seated: Amy Veawab, Doug Kelln Missing: Peta Bonham-Smith, Craig Zawada

SRC Organizational Chart as of April, 2004

Board of Directors

President & CEO
Laurier Schramm

Chief Financial Officer
Crystal Smudy

Agriculture & Biotechnology
Gerry Brown
Vice-President

Energy
Ernie Pappas
Acting Vice-President

Environment & Minerals
David Grier
Vice-President

Laboratory Services
Michael Weekes
Vice-President

Manufacturing/ Value-Added Processing
Craig Murray
Vice-President

Business Development
Ranga Ranganathan
Director

Corporate Services
Ken Owens
Director

Human Resources
Toby Arnold
Director

Corporate Relations
Wanda Brown
Manager

SRC—Impacting Your World

The theme for the Saskatchewan Research Council's 2003-04 Annual Report is Impacting Your World. We chose it to convey a sense of the growing impact SRC is having on the economy, the environment and the daily lives of the people of Saskatchewan.

We also hope to convey a sense of the impact SRC and its partners are having on the world. As the pages of this report indicate, Saskatchewan projects and expertise are increasingly gaining attention from an international audience.

One way we evaluate our progress in meeting our mandate is to measure the economic impact, in Saskatchewan, of SRC's activities. As will be seen in this report, our research shows that the impact of our R&D activities on the Saskatchewan economy continues to be substantial.

SRC's impacts go beyond dollars and cents. We also work on projects that contribute to a sustainable environment. While it is hard to put a price on quality of life, our activities help to protect water, air and land quality, and conserve precious resources like energy.

The Annual Report is an opportunity to highlight some of our work with clients and partners, and the successes they are experiencing. Impacting Your World in positive ways is what we are working towards.

"Beekeepers, in general, feel the best solution to this problem would be to select stock with a heritable resistance to parasitic mites - SRC's work is essential for the identification of DNA-based markers that will allow us to track, and breed for, such heritable resistance traits."

– Albert Robertson,
Saskatchewan Beekeepers' Association

SRC and the Mad Cow Crisis

In 2003, BSE—commonly known as Mad Cow disease—had a devastating impact on the livestock industry and weakened the Saskatchewan economy. Bova-Can Laboratories, a joint venture of Saskatchewan Research Council and Bova-Can Parentage Testing Inc., played a significant role in helping the Canadian Food Inspection Agency (CFIA) manage the crisis.

Tracing the origin of the index (infected) animal is the key to handling cases of BSE (Bovine Spongiform Encephalopathy). When an infected animal is found, the CFIA moves quickly to identify the animal's herd of origin so that measures can be taken to isolate the disease. Since the index animal found in Alberta was not wearing an ear tag to help trace its history, CFIA turned to Bova-Can's expertise in genetics.

Bova-Can was asked to compare a DNA sample from the index animal to a number of possible sires, and to the lab's 460,000-sample genetic bank for cattle. This test helped CFIA trace the location of farms where the infected animal lived throughout its life and identify farms where other cattle may have been exposed to the infected animal.

Subsequently, 2700 cattle that may have come into contact with the diseased animal were destroyed and examined by the CFIA. None had contracted BSE, easing concerns about food safety.

When the second possible BSE case from Washington State was identified, Bova-Can was once again asked by the CFIA and United States Department of Agriculture to provide DNA-based genotyping to confirm the animal's identity and origin. This confirmed Bova-Can's international reputation in livestock genetics.

BSE is a form of Transmissible Spongiform Encephalopathies (TSE), a set of fatal nerve diseases which includes Creutzfeldt-Jakob disease (CJD) in humans, Chronic Wasting Disease (CWD) in deer and elk, and Scrapie in sheep and goats. They are referred to as "spongiform" diseases because infected brain tissue has a sponge-like appearance when viewed through a microscope. TSEs disrupt neurons in the brain in immense numbers, eventually leading to the death of the infected individual. While the cause of TSEs is not fully understood, it is associated with the presence of an abnormal conformation of a normal cellular protein called a prion.

Restoring the confidence of importing nations in Canadian beef may rely in part on effective systems to trace the source meat and animal samples. Such systems are already in place in Australia, New Zealand and Europe but lag behind in North America. SRC's Agriculture and Biotechnology Division is currently working with the CFIA, the Canadian Livestock Identification Agency and Health Canada to establish a DNA-based back-up system for meat traceability.

SRC is also providing product for research studies targeting prion-mediated TSEs. Ultimately, genetic research may provide information that will make it possible to breed cattle that are resistant to BSE.

Developing Genetic Markers for Honey Bees

The Saskatchewan Beekeepers' Association (SBA) and SRC's GenServe Laboratories are collaborating on a project designed to improve genetic resistance to parasitic mites that are threatening North America's billion dollar honey and pollination industry.

Parasitic Varroa and tracheal mites are causing huge economic losses in the honeybee industry worldwide, resulting in serious shortages of honeybees for pollination and honey production. In recent years this problem has been compounded by the discovery of Varroa mites, resistant to all licensed chemical treatments. Entire honeybee operations have been lost in the eastern U.S. and many Canadian colonies have been damaged. Chemical treatment of honeybees can be problematic because of the possibility of chemical residues contaminating honey.

"Beekeepers, in general, feel the best solution to this problem would be to select stock with a heritable resistance to parasitic mites," says Albert Robertson, the principal investigator in the study.

"Several years ago the SBA and the Ontario Beekeepers Association initiated a project involving the importation of honeybee embryos from the U.S. Department of Agriculture (USDA)," reports Robertson. "The objective was to introduce new genetic stocks with improved resistance to pathogenic honey bee mites. This stock originated from eastern Russia and was reselected in the U.S. by USDA scientists."

Robertson says that a few Saskatchewan queen breeders have reconstructed pure Russian lines by using isolated mating procedures. However, the major problem faced by these breeders is the identification of pure lines because of the lack of visible characteristics to distinguish Russian from Canadian honeybees.

"The SBA initiated a pilot project in 2003 using matching funds from the Canadian Adaptation and Rural Development Program (CARDS) to attempt identification of molecular markers for genotyping Russian lines. GenServe Laboratories was contracted to screen Russian and Canadian lines with selected microsatellite sequences. This resulted in positive results in initial studies, prompting a more extensive study for 2004," said Dr. Gerry Brown, SRC's VP of Agriculture and Biotechnology. He also reports that 20 microsatellite markers, useful in identifying bees of Russian origin, have been identified so far.

Some of the resistant bee stock was released to commercial producers last year and more will be available this year. Some stock released this year will be genotyped using the microsatellite markers identified, with GenServe Laboratories performing microsatellite marker analyses on a contract basis. This work is helping strengthen the Saskatchewan beekeeping industry.

Predicting the Genetic Potential of Bulls for Milk Production

Bova-Can Laboratories has completed a project with the Semex Alliance, an association of artificial insemination (AI) and select businesses involved in dairy cattle genetics. The main purpose of the project was to identify pieces of chromosomes in Holstein bulls that make them better than average at siring superior milking cows.

For the dairy industry, the most important inherited traits in cattle are associated with milk fat, milk protein, milk yield and the general physical conformation of the cows. For obvious reasons, milking traits cannot be measured in bulls, but a bull's genetic contribution to milking ability can be estimated by looking at the performance of its daughters.

Using knowledge of their ancestry and milking records, Bova-Can Laboratories established complex genetic profiles of the fathers and grandfathers of a number of elite cows. The challenge was to identify

the chromosomal regions always found in the fathers of these cows—a question the Semex Alliance was attempting to answer.

Bova-Can Laboratories used a collection of genetic markers—short, identifiable DNA sequences—randomly dispersed throughout cattle chromosomes. Through a series of studies, particular DNA markers were associated with a known effect on the performance of the milking daughter and chromosomal regions associated with better dairy production were identified. Theoretically, the DNA markers can be used to identify young bulls that will produce better milk cows and breeding can be improved by using DNA-based genetics to select an appropriate bull rather than having to wait for two or three generations of milk production data.

The next research milestone will be to fully characterize the chromosome pieces and find the actual genes responsible for differences in milk production. Once this is done, a simple DNA test based on the gene sequence will help the dairy industry make better decisions on breeding design, allow pre-testing of the milking ability of very young animals, and help select those animals that show superior genetic potential. This will help the Canadian cattle industry produce the best possible animals for production and export.

Using Genetics in Wildlife Conservation Programs

Over the past year, Bova-Can Laboratories, in collaboration with researchers from central Canada, used DNA typing to examine the genetic structure and diversity of wolf populations in two areas of Northern Saskatchewan. Comparisons were also made between the Saskatchewan populations and those in Manitoba and Alberta.

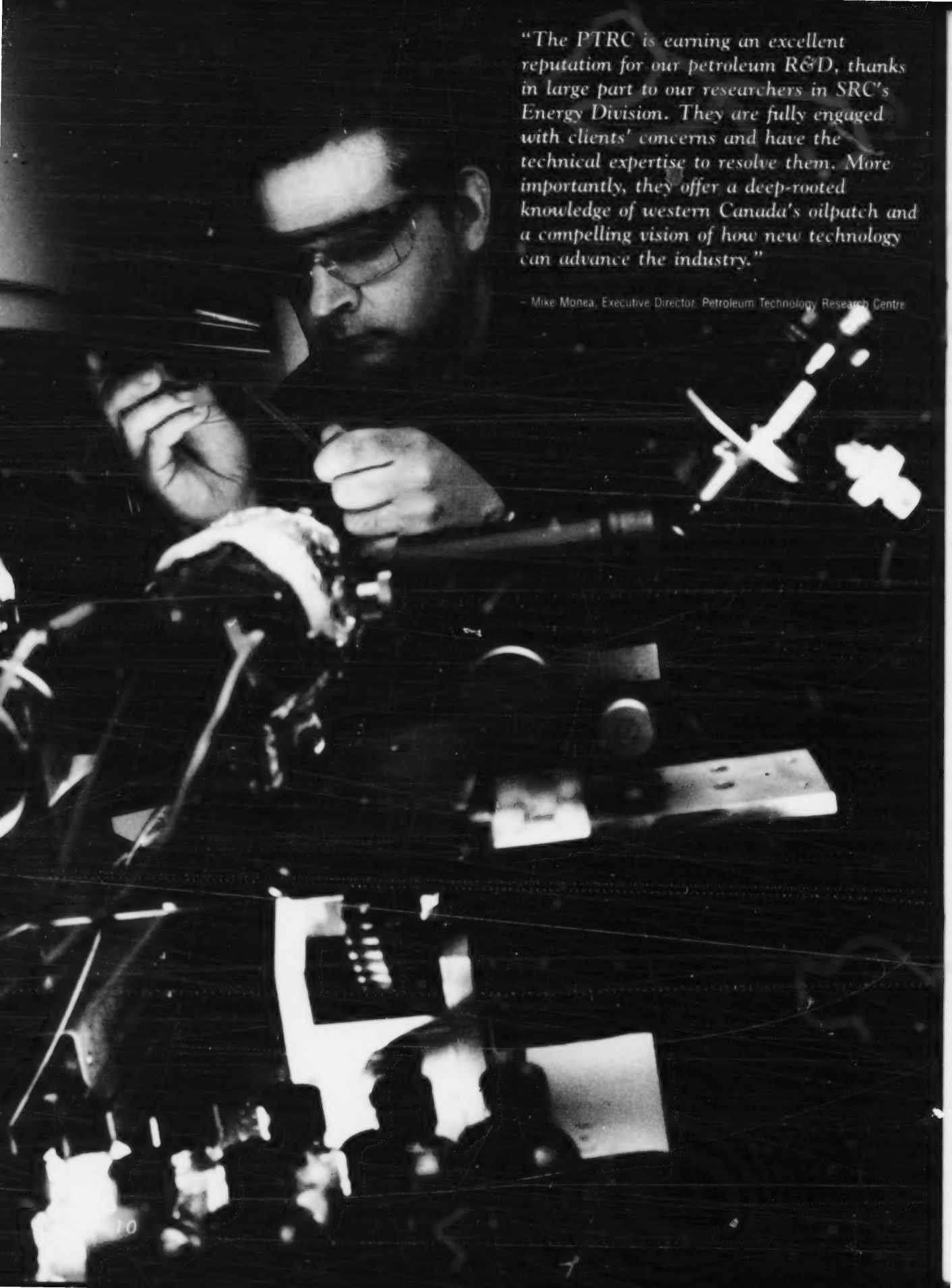
"Bova-Can's experience, expertise and credibility provided a valuable resource and service which aided our ability to manage the BSE incidents."

– Paul Kitching, Director, National Centre for Foreign Animal Disease, Canadian Food Inspection Agency/Health Canada

The research contributes to an understanding of population distribution and wolf migrations and helps measure the genetic diversity of wolf populations. These are important considerations for future wolf population management.

Erin Urton, a graduate student at the University of Saskatchewan, is focusing her work on wolf populations in Prince Albert National Park and an area around LaRonge. "Essentially, we supplied Bova-Can Laboratories with information on which DNA markers we wanted to use for the Grey Wolf program. They performed the DNA typing and analyses on 150 wolf DNA samples," says Urton.

"We often assist graduate students," says Dr. Yves Plante, Manager of Bova-Can Laboratories. "A number of our staff are adjunct professors at Saskatchewan universities, and we frequently serve on supervisory committees for graduate students or provide analysis in support of their research programs."



"The PTRC is earning an excellent reputation for our petroleum R&D, thanks in large part to our researchers in SRC's Energy Division. They are fully engaged with clients' concerns and have the technical expertise to resolve them. More importantly, they offer a deep-rooted knowledge of western Canada's oilpatch and a compelling vision of how new technology can advance the industry."

– Mike Monea, Executive Director, Petroleum Technology Research Centre

Energy

Enhanced Oil Recovery Objective of Multi-Year Project

Saskatchewan's heavy oil resource is valuable and vast. However, over 90% of the original resource—26 billion barrels—remain underground following primary production using current methods. In 2003-2004, SRC made significant progress towards addressing the oil industry's need to produce a larger portion of this heavy oil, through a series of multi-year projects to develop enhanced oil recovery (EOR) technologies.

According to Brian Kristoff, SRC's Manager of EOR Field Development, "Vapex is one of the new processes under study at SRC that will improve competitiveness by making domestic heavy oil reservoirs targets for additional development rather than abandonment."

Currently, the oil industry uses steam injection to reduce the viscosity of heavy oil, making it easier to extract from the reservoir. Vapex (vapour extraction) substitutes various kinds of solvents for steam to improve recovery.

"Vapex may prove more effective than steam injectjon," says Kristoff. "More importantly it is a process that is more environmentally friendly and more energy efficient than steam."

The targeted heavy oil resource in Saskatchewan and Alberta is 5-8 billion barrels. It is estimated that by using Vapex instead of steam we could avoid 85 million tonnes of CO_2 emissions and 400 million barrels of fresh water use per billion barrels of oil produced.

Enhancing recovery and extending the production life of the heavy oil resource could also preserve and/or create an estimated six to ten thousand jobs in the resource industry over the next 3-20 years.

SRC is conducting the work through an industry-oriented R&D program sponsored and largely funded by the Petroleum Technology Research Centre (PTRC) in Regina. The PTRC is a collaborative research initiative of SRC, Saskatchewan Industry and Resources, Natural Resources Canada and the University of Regina.

PTRC and SRC are developing and assessing the application of the Vapex process in collaboration with the oil company, Nexen Inc. Three Vapex field tests will be conducted in three distinctly different reservoirs. While the basic principles of using solvent to reduce the heavy oil viscosity are the same in all three cases, the application can be dramatically different. The collaboration will test different injection/production schemes, different solvent compositions and varying wellbore architectures.

PTRC brings to the project its credentials as manager of several successful R&D consortia. PTRC managed the multi-million dollar International Energy Agency CO_2 project and the PTRC/Industry Consortium Core Petroleum Research Program, and more recently led the latest consortium research project to assess the Vapex process. This last project was sponsored by ten industry clients and led to the single-well field test conducted by Nexen at Plover Lake over the last two years. SRC was a key research provider on this project.

According to Kristoff, "Our goal is to build on these latest pilot projects, to develop and demonstrate the application of the process in the field, and to disseminate the technology throughout the industry. In the coming year, we will collaborate on a multi-well pilot project with Nexen which will be a significant step forward for the technology." This work enables the Saskatchewan and Alberta petroleum industries to increase or maintain production while reducing costs and eliminating emissions.

VAPEX FIELD TRIALS EXPAND

When Nexen established a single-well pilot project in 2003 to assess solvent injection enhanced oil recovery (EOR) at its Plover Lake oil reservoir, it needed rapid analysis of the fluids pumped from the well to determine the effectiveness of the technology.

SRC responded by placing a trailer lab on site to provide quick turnaround on its liquid and gas analysis of the fluids. The portable lab cut typical analysis turnaround times from five to ten days down to 24-48 hours. The information provided allowed Nexen to continuously adjust injection rates and operating parameters.

"Positive results have led to the continuation and expansion of Nexen's pilot project," reports Doug Soveran, Production Processing Manager for SRC. Soveran says Nexen is now experimenting with injecting two different solvent mixtures at two different sites.

"SRC's portable lab will support the field test by providing on-site liquid and gas analysis, and interpretation of the information, which will be backed up by work at our Regina labs," says Soveran. "Injection and analysis of the results will continue for about a year at these sites."

SRC analyzed the gas samples obtained from the site to determine the fate of injected solvents. Liquid samples are analyzed for dissolved gas content and characteristic changes to assess how much of the solvent is dissolved and whether the crude oil is upgraded. Nexen's personnel will also be trained in sample collection and analysis techniques.

24TH SYMPOSIUM ON ENHANCED OIL RECOVERY HOSTED IN REGINA

SRC's record in enhanced oil recovery (EOR) research and development contributed to an opportunity to partner with PTRC in hosting the International Energy Agency's (IEA) 24th Workshop and Symposium on Enhanced Oil Recovery in Regina from September 7-10, 2003.

The IEA, an autonomous intergovernmental agency linked with the Organization for Economic Co-operation and Development (OECD), is committed to advancing security of energy supply, economic growth and environmental sustainability through energy policy co-operation. Seventy people from close to 15 countries participated in the IEA symposium. Highly technical in nature, the annual event involves people with a high degree of specialization in EOR.

The papers presented by SRC scientists reviewed aspects of chemically enhanced recovery of heavy oil, the effect of impurities in CO_2 on gas injection EOR processes, and how steam and CO_2-related oil recovery are redefining Canada's energy resources.

The IEA symposium provided an opportunity to gather the world's top specialists in the field, in Saskatchewan, to share ideas and to facilitate work between researchers in different countries.

"Hosting the symposium in Regina gave Saskatchewan an opportunity to show off its EOR projects to the world," commented symposium participant Malcolm Wilson, Director of Energy and Environment at the University of Regina. "It was also a great opportunity for Saskatchewan students to be exposed to the field and to listen to the key people in fundamental research."

"We think Vapex has a high potential to improve heavy oil recovery, particularly in Saskatchewan. SRC is making a major contribution to the process, especially with its mobile field lab. They have been very cooperative and we like working with them."

– Ed Erlendson, General Manager, Enhanced Oil Recovery, Nexen Inc.

Office of Energy Conservation Completes First Full Year

Saskatchewan's Office of Energy Conservation (OEC), which is operated for the Government of Saskatchewan by SRC, developed a wide range of projects in 2003, its first full year of operation.

One very popular program was a tax rebate on energy efficient appliances. The initial uptake on the Energy Star Appliance Provincial Tax Rebate, announced jointly by Saskatchewan Finance and the OEC in December, exceeded expectations by over 50% and is projected to double in the coming year. By fiscal year end, almost 4000 applications had been received for PST (Provincial Sales Tax) rebates on energy efficient refrigerators, freezers, dishwashers and clothes washers.

Other highlights for the year include a pilot energy efficiency lighting program, initiated by the OEC and the Saskatchewan Association of Rural Municipalities (SARM), involving six rural municipalities and SARM headquarters. By taking advantage of the Saskatchewan Property Management Corporation's (SPMC) purchasing power, municipalities can buy energy conserving lights and ballasts at costs up to 55% below retail. The OEC is now pursuing a memorandum with SARM and SUMA (Saskatchewan Association of Urban Municipalities) to extend the initiative across the province.

The OEC also contracted with SRC for technical assistance in meeting a Cabinet decision to create higher energy efficiency standards for all new government and Crown agency buildings, as well as many commercial buildings that receive public funding in Saskatchewan. The new standards will be 25% above the Model National Energy Code for Buildings (1997).

"The bloodline of Mother Earth is its water source and it is up to each and every one of us to protect it. The Elders have always talked about Mistawasis being situated over a large body of water and we wanted to preserve this source in the most effective, efficient manner for generations yet to come. We feel that by aligning our community with SRC we not only can preserve our water source, but our community in its entirety, for future generations."

– Chief Darryl Watson, Mistawasis First Nation

Environment

SRC Staff Mobilize to Monitor Mining Crisis

When a large influx of water inundated Cameco's McArthur River uranium mine last April, a massive effort was required to deal with the crisis and monitor the environmental impacts.

For SRC's Analytical Laboratories, Saskatoon that meant an all-out effort to assess hundreds of water samples for radionuclide contaminants and inorganic properties. With three samples being collected at the McArthur River mine every eight hours around the clock for six weeks, and flown to Saskatoon, the staff established a rotating schedule to cover evening and weekend work until the crisis abated.

About 900,000 litres of water per hour began to pour into the mine when drilling crews inadvertently struck a water source. All of the water pumped out of the mine had to be sampled and tested for contaminants before being released to the environment, resulting in the huge number of samples and critical turnaround schedule.

After about six weeks, the frequency of sampling decreased to one in eight hours, but the requirement for a quick turn-around time continued until March of 2004.

"This was an excellent example of our ability to respond to a client's emergency situation," says Dave Chorney, Radiochemistry Supervisor for SRC Analytical Laboratories. "We had to reorganize and work around the clock to handle the time-critical samples, and at the same time continue with our normal workload. That we were able to do so gives our clients the confidence that we provide extraordinary service."

Synchrotron Used to Study Environmental Release of Mercury

SRC is collaborating with the Canadian Light Source (CLS) and other organizations to develop applications for synchrotron technology in the environmental area. In 2003, SRC contracted with SaskPower, Environment Canada, the U.S. Electric Power Research Institute (EPRI) and Saskatchewan Industry and Resources to conduct micro-particle emission research looking specifically at the atmospheric release of mercury from coal-burning power plants.

In collaboration with the universities of Saskatchewan and Kentucky, SRC is involved in designing an aerosol particle that can be introduced into flue gas to capture elemental mercury atoms. The synchrotron is used to assist in understanding the chemistry of mercury particle absorption.

Dr. Stan Shewchuk, SRC's Atmospheric Processes Leader, says once the mercury is captured, the fly ash can be passed through a fabric filter or other such device that extracts the particles, preventing their release into the atmosphere.

"Our work helps determine the nature and amount of mercury particles that can be trapped and the amount released to the atmosphere. This is a clear example of the practical benefits society can expect from applications SRC is developing from synchrotron-related research."

Impacts of Climate Change Assessed

In 2003-04, the Environment and Minerals Division was active in a number of projects assessing the impacts of climate change.

Three projects were designed to assess risks related to CO_2 (carbon dioxide) injection into oil bodies to reduce greenhouse gas emissions and enhance oil recovery. The projects were associated with the Weyburn CO_2 Monitoring and Storage Project, where CO_2 emitted from industrial CO_2 emissions is injected underground under high pressure, reducing atmospheric emissions. Over the life of the project, 14 million tonnes of CO_2 will be sequestered underground.

The key objective was to develop a better understanding of the hydrogeology of the area and to map possible avenues by which pressurized CO_2 could escape from the injection zone to the surface. If pressurized CO_2 escapes, positive environmental impacts will be lost and industry will not be eligible to claim carbon credits for emission reductions.

Another set of projects studied the potential to increase the carbon uptake of forest soils and plants. Reforestation using fast growing tree species and methods of forest management such as tree thinning were studied to identify practices likely to sequester more carbon. New tree species and forestry methods that increase carbon uptake may earn carbon credits under international agreements on climate change. They can also offer faster tree growth and more stock for production of forest products such as oriented strand board (OSB), ethanol or even electricity for northern communities.

Impacts of climate change on the grazing capacity of native grasslands were also considered. Several models were used to simulate the warmer climate expected in the 2050's on the Canadian prairies. Different models showed increased or decreased grass production, however none showed dramatic changes or supported predictions of desertification of Canadian grasslands as a result of climate change over the next 50 years. This work helps develop the knowledge industry and government needs to ensure Saskatchewan adapts to the effects of climate change.

Grassland Management in Inner Mongolia

Dr. Jeff Thorpe, plant ecologist with SRC's Environment/Minerals Division, has completed his fourth year of research and extension activities focused on the grasslands of Inner Mongolia. The result is a guidebook on range conditions and stocking rates that can be used by Chinese officials.

Part of a larger development initiative jointly funded by the Canadian International Development Agency (CIDA) and China, the project aimed to develop management tools to assist Chinese ranchers enhance the productivity and sustainability of their grazing systems.

"Population pressures are creating enormous overgrazing problems in Inner Mongolia. In North America, we have standardized methods to assess range condition and stocking rates, which helps prevent overgrazing. Our task was to work with our local counterparts to create tools for sustainability and put all the information together into one handy publication."

"We showed them our approach and helped flesh it out with their own information. We had the draft translated into Chinese and held training courses on how to use the document."

Thorpe's work was recently featured in a documentary film on the larger CIDA project produced by Regina's Livewire Video Productions. This work is an example of how capabilities developed to serve Saskatchewan's needs can also be applied internationally.

Participation in Model Forest Research

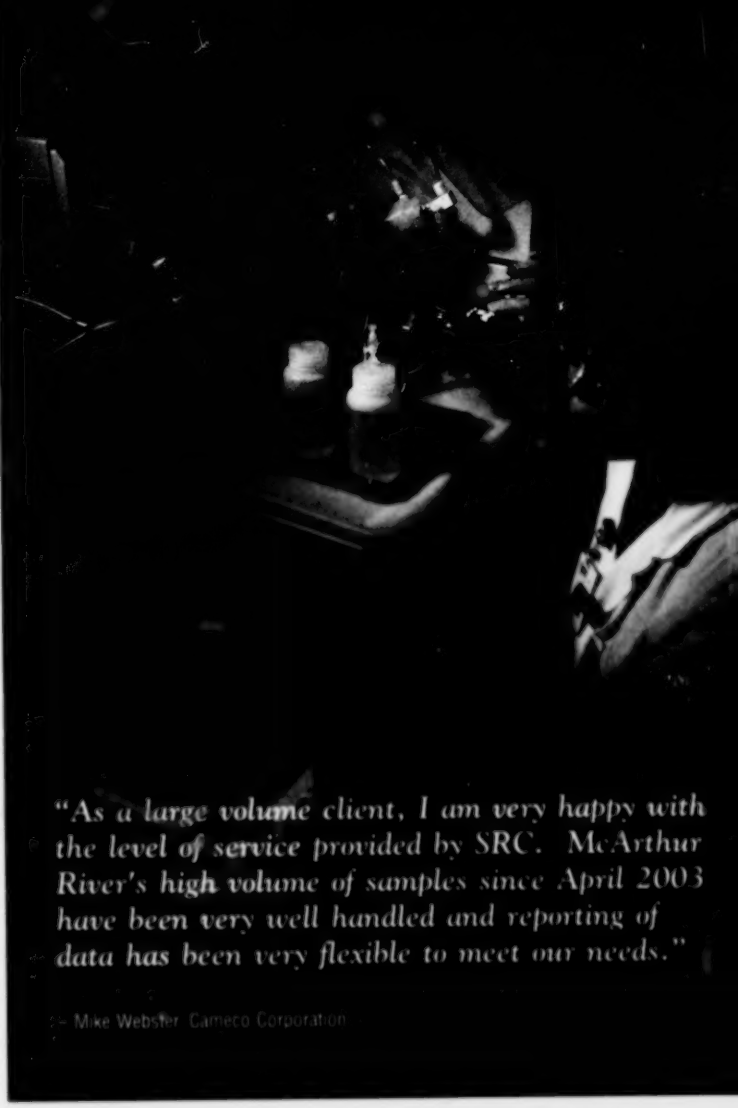
In association with the National Water Resource Institute, SRC is currently conducting a regional study of the surface and groundwater conditions in the Prince Albert Model Forest (PAMF) area. The project assesses overall surface water and groundwater resources of importance and examines areas of groundwater-surface water interactions, such as upland areas, wetlands, streams and lakes. These interactions will be interpreted in the context of the major land uses in this area, such as forestry, trapping, and residential and recreation interests.

Other SRC activities related to the PAMF include studies of the impact of climate change on forest tree growth and forest fires and forest management of riparian zones (areas adjacent to lakes, rivers and creeks). Climate change is expected to significantly alter the composition and range of forests over the coming century and to increase the incidence of fires. Riparian zones require distinct management practices due to their unique ecological features.

SRC continues to be an active participant in the PAMF, a non-profit partnership of forest users committed to the sustainability of Saskatchewan's forests.

MOU Signed with Mistawasis First Nation

On August 22, 2003, SRC signed a Memorandum of Understanding (MOU) to establish a cooperative, long-term relationship with Mistawasis First Nation. SRC will collaborate with Mistawasis on projects designed to improve the economy and quality of life of the community in an environmentally sustainable manner.

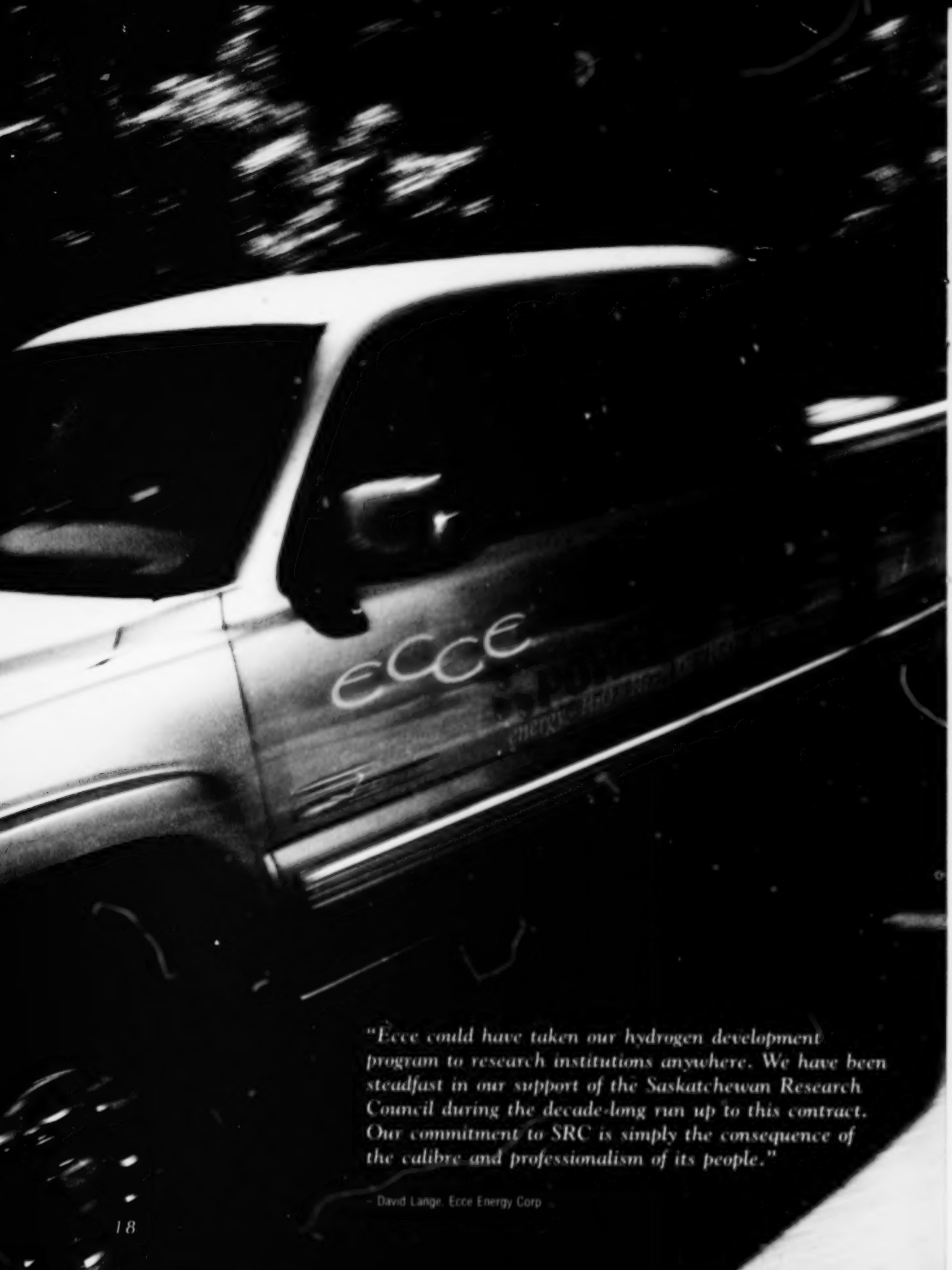


"As a large volume client, I am very happy with the level of service provided by SRC. McArthur River's high volume of samples since April 2003 have been very well handled and reporting of data has been very flexible to meet our needs."

– Mike Webster Cameco Corporation

The partners have completed an initial project to investigate local groundwater resources. This project investigated the history of groundwater usage on the Mistawasis First Nation, the concerns of the elders and the local residents, groundwater quality, and the geological controls on the local groundwater quality and quantity.

SRC, in conjunction with the First Nations University of Canada, the University of Saskatchewan, Mistawasis First Nation and several other First Nation communities, has recently been awarded funding for a related project to investigate the effect of historical waste disposal practices on both the groundwater quality and the health of the local population.



"Ecce could have taken our hydrogen development program to research institutions anywhere. We have been steadfast in our support of the Saskatchewan Research Council during the decade-long run up to this contract. Our commitment to SRC is simply the consequence of the calibre and professionalism of its people."

– David Lange, Ecce Energy Corp

Hydrogen/Diesel Truck a World First

The world's first hydrogen/diesel truck is one result of technologies being developed to enable the use of hydrogen as a transportation fuel being conducted by SRC with the Ecce Energy Corporation, a Saskatchewan company, and Natural Resources Canada. This first prototype demonstrates the technical feasibility of retrofitting existing vehicles with dual-fuel hydrogen systems.

Proprietary hydrogen systems being developed in Saskatchewan are considered a critical bridging technology as the transportation industry moves towards vehicles powered by hydrogen fuel cells. Dual-fuel vehicles burn hydrogen in an internal combustion engine, whereas a fuel cell is a battery, and uses other fuels, such as hydrogen and oxygen to create electricity.

Greenhouse gas (GHG) and other tailpipe emissions could be significantly reduced by using hydrogen blends. SRC's unique modification of existing vehicles to use hydrogen alongside conventional fuels provides an opportunity to reduce emissions at the lowest cost, with greatest flexibility for the vehicle operator.

As part of this study, two prototype vehicles using hydrogen will be developed. The first vehicle, a General Motors (GM) heavy-duty pickup truck with a 6.6-L turbocharged diesel engine, is already complete. It can be operated on diesel fuel alone, or on a combination of diesel and up to 60% hydrogen. The performance of the vehicle is excellent, and there is no power loss when operating in the dual-fuel mode. The second prototype being developed is also a GM pickup truck, and will be powered with a 6.0-L engine that will burn gasoline and hydrogen.

Development of the prototypes is expected to lead to further demonstrations of this novel hydrogen technology in Saskatchewan. This development and demonstration is positioning Saskatchewan industry to commercialize the technology and develop hydrogen infrastructure in the province and across Canada.

Intelligent Systems Projects Move Forward

The Saskatchewan Intelligent Systems Technologies (SIST) Precarn Alliance Program—a partnership designed to help Saskatchewan industries develop and apply intelligent systems (IS)—announced funding for two IS projects involving SRC in 2003. The program is a joint effort of SRC, Saskatchewan Industry and Resources (SIR) and Precarn Incorporated.

Acutec Systems Ltd. is developing an intelligent Liquid Level Sensing System that will increase the accuracy of remotely measuring fluid levels in oilfield storage tanks. SRC's role is to develop the concept to a workable prototype and assist with pre-commercialization.

HDRK, a subsidiary of AMTS International, is developing a Rock Motion Detector, a computer-controlled sensor technology that determines the mass of rock in underground mines. To enable this, SRC is adapting a unit currently used by the industry with the new intelligent systems technology.

"Intelligent systems incorporate sensors, software and computers embedded in machines and devices," says Kim Young, SRC's Manager of Development Engineering. "They emulate and actively employ some part of the intelligence of a human being in performing tasks. This program involves "high end" systems, which require some combination of a

higher level of integrated sensing, reasoning activity and integration with humans."

The four-year SIST-Precarn Alliance program will contribute $4 million for approved IS projects, with matching funds from Precarn and SIR. SRC's Development Engineering will lead the technical research component of the program.

Acutec's system will aid in controlling spills of hazardous materials, optimize production and storage and make maintenance of such material more reliable and less prone to human error.

HDRK's Rock Motion Detector can determine the mass of discrete rocks, their relative degree of structural integrity and their association with adjacent material, eliminating the current subjective method of interpreting the vibration upon impact.

Both projects are helping Saskatchewan companies thrive and maintain worldwide competitiveness.

Precarn is a national not-for-profit member-owned consortium of corporations, research institutes and government partners that provide funding for the development of IS technologies.

Energy Retrofits Save Up to 40%

The Canada Mortgage and Housing Corporation (CMHC) and SRC completed an energy efficient home retrofit project early in 2004. The project found that it is possible to achieve energy savings of up to 40% in existing housing through a variety of conservation and efficiency measures.

Since new annual housing starts in Canada in recent years represent less than 2 per cent of existing housing stock, if Canada only addresses energy consumption in new dwellings, it will not achieve substantial greenhouse gas emissions (GHG) reductions.

CMHC and SRC undertook studies of five houses with different styles, ages, sizes, occupancy and initial conditions. Pre-retrofit house characterization, testing and documentation were performed. Using HOT2000 computer models, retrofit plans for each house were developed to meet a performance goal of 40% energy reduction. Homeowners were provided with a list of necessary changes, which they undertook at their own expense.

Retrofit measures included a wide range of items, from improving insulation and weather stripping to replacing furnaces, appliances and lighting with high efficiency models.

Using utility meter readings taken by the homeowners and by SRC staff, comparisons were made between the post-retrofit energy consumption and the pre-retrofit energy consumption. Savings ranged from 24% to 40%. The simple payback period — the time it will take homeowners to recoup their investment from energy savings — ranged from 8 to 17 years (using current utility rates).

The main reason why some homes did not meet the 40% reduction target was the failure of the homeowner to implement all the retrofit measures as recommended.

"This project has shown that residential retrofitting can be very effective in reducing energy consumption," says Dr. Rob Dumont, SRC's Building Performance Manager. "The use of improved efficiency furnaces, insulation, air sealing,

major electrical appliances and lighting, at a nominal cost, can provide substantial energy savings with attractive payback periods. It can also reduce GHG emissions, helping Canada demonstrate leadership on the climate change issue."

New Power Sources for the North Studied

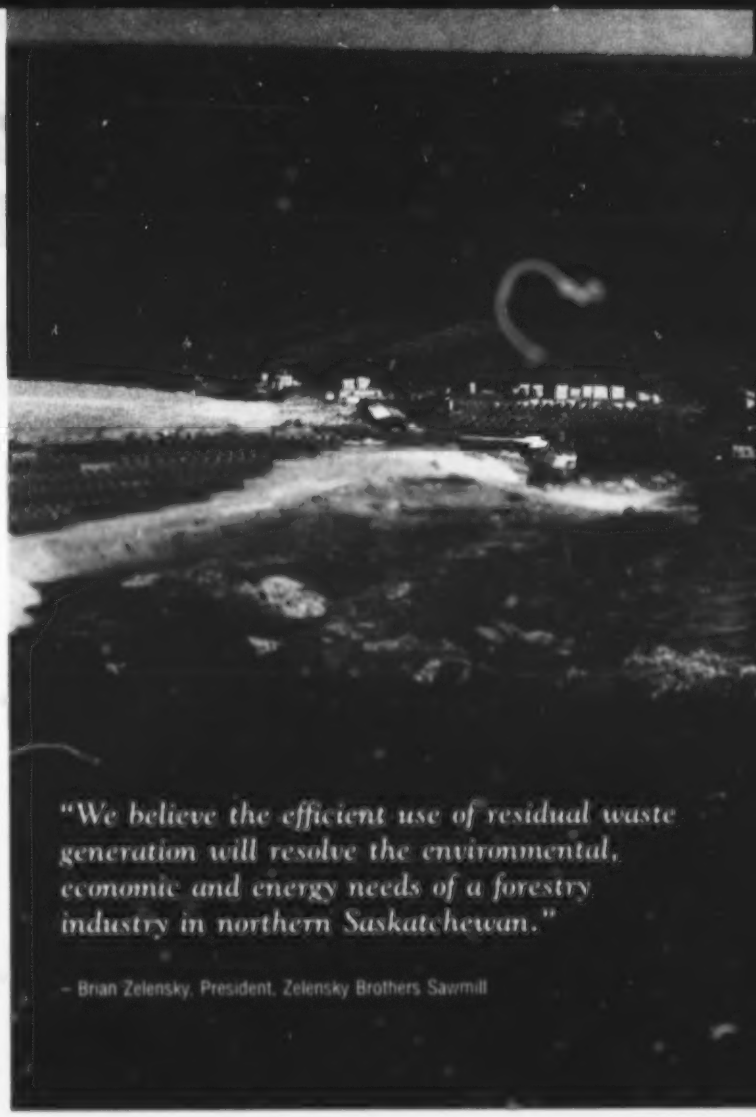
SaskPower and SRC are collaborating on a wood gasification demonstration project at the Zelensky Brothers Sawmill in La Ronge, Saskatchewan. Synthetic gas produced from a mountain of wood residue at the sawmill will fuel two internal combustion engines to produce 600 kW of electricity.

Up to 15 tonnes of wood residue per day will be converted to gas. Waste heat from the engines can also be used in a kiln to dry green lumber.

SRC, which was contracted by SaskPower as technical advisor to the project, provided recommendations on the supplier for the wood gasification technology and identified suitable sites to test it.

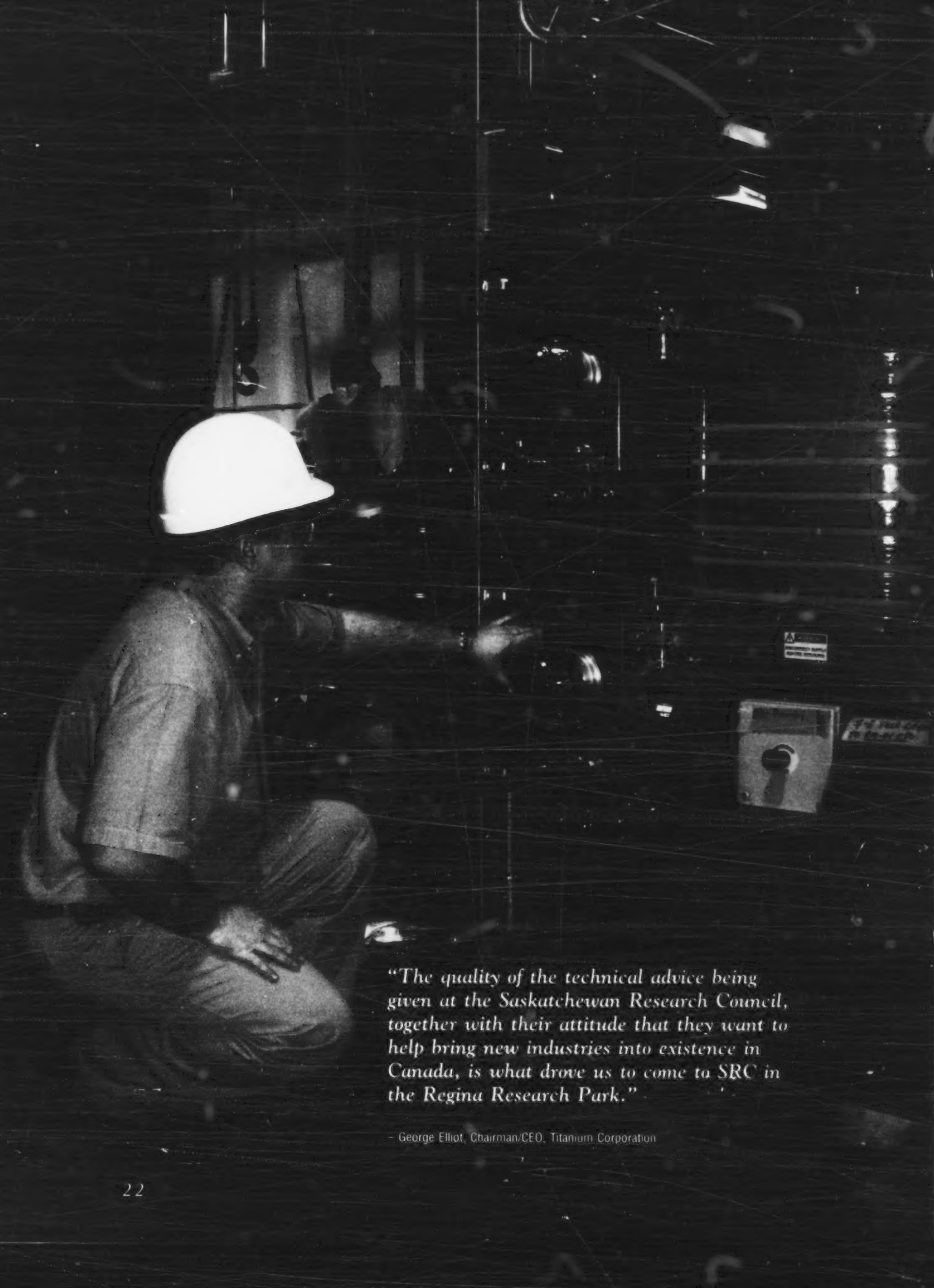
The project provides an opportunity to test the feasibility of "distributed generation", the process of producing electrical power on a small scale where it is needed. This increases opportunities to utilize local fuel sources, such as wood wastes.

Significant amounts of wood residue are produced at a number of mills in Saskatchewan's North. One study puts the annual volume of residues produced in Saskatchewan at 1.7 million cubic metres. In addition, more than 6 million cubic metres of residue are already stockpiled at mills throughout the north.


"We believe the efficient use of residual waste generation will resolve the environmental, economic and energy needs of a forestry industry in northern Saskatchewan."
– Brian Zelensky, President, Zelensky Brothers Sawmill

It has also been estimated that 65 MW of electrical capacity could be produced from annual production of wood mill residues and existing piles of wood residues. If Saskatchewan's lumber and paper industry expand, up to 150 MW per year of capacity is possible.

Environmental studies show that converting waste into energy results in cleaner air. It also reduces emissions of greenhouse gases. Producing power on site in northern communities is more efficient, resulting in additional energy savings by reducing the power lost when electricity is transported across hundreds of kilometres of line from southern power plants.



"The quality of the technical advice being given at the Saskatchewan Research Council, together with their attitude that they want to help bring new industries into existence in Canada, is what drove us to come to SRC in the Regina Research Park."

– George Elliot, Chairman/CEO, Titanium Corporation

Mining and Minerals

Mineral Sands Processing Facility Planned

The Regina Research Park (RRP) will be the site of a new mineral sands processing facility. Titanium Corporation Inc. of Toronto, which is partnering with SRC and RRP to build and operate the facility, invested $5 million in the project. The plant will initially employ five employees and expects to spend about $2.5 million per year in operations.

The pilot plant will demonstrate technology to produce high-grade titanium bearing minerals and zircon from tailings produced at Syncrude Canada's centrifuge plant in Fort McMurray. A side-effect of Syncrude's oil extraction process concentrates titanium and zirconium minerals, making the tailings a very rich source.

The technology needs to be proven on a pilot scale before being developed commercially. Titanium Corporation chose the Regina site primarily due to SRC's strong reputation and ability to support the process. SRC will provide analytical and technical services, as well as ongoing research and development for other applications.

Titanium Corporation leased 2800 square feet in SRC's existing pilot plant and constructed an additional 4250 square foot building. The plant, which will process up to 5 tonnes of sand per hour and extract marketable titanium and zircon products, will also serve as a model for a commercial-scale operation.

Titanium provides an extremely white pigment used in paint, plastics and other products. The project takes the company another step closer to being able to recover one of the world's most valuable resources from a secure, long-term source of supply that has so far gone to waste. Zircon, another valuable product, is mainly used in producing a hard glaze for ceramic tiles.

A Diamond Lab with a World Class Reputation

Saskatchewan is considered one of the most promising areas for diamond exploration in the world. Some of the largest kimberlites anywhere have been found here and exploratory mining activities have already yielded significant quantities of macro-diamonds.

The local capacity to support exploration activities—including the only full-service diamond lab in the prairie provinces—is a significant incentive for mining companies to pursue exploration here. Established in 1972, SRC's Geoanalytical Laboratories have been active in the search for Saskatchewan diamonds since 1987.

Set up primarily to assist in the local search for diamonds, the diamond lab has now established a world-class reputation. In 2002-03, it delivered some $1.2 million in services to an international clientele. In order to accommodate the rapid growth in its business, SRC tripled its processing capacity for indicator minerals over the past year. Plans are also set for further expansions to accommodate a wider choice of processing methods.

The increasing prominence of diamond exploration and mining in northern Canada has given rise to a set of questions associated with the identification, characterization, and processing of diamonds.

Canada's first synchrotron is expected to play a significant role in answering questions around origin. The Canadian Light Source and SRC

researchers are working on a method to distinguish Canadian diamonds from "blood diamonds" produced in conflict regions.

"Using non-destructive synchrotron light, we are studying ways to 'fingerprint' diamonds according to their geographical area of origin," says Dave Quirt, Economic Geologist at SRC. "So far, we have found enough similarities in diamonds from a given region that we may be able to come up with a system of distinguishing them from those from other areas." Potentially, this will be a valuable tool for law enforcement and may also improve the market for Canadian diamonds.

Synchrotron light may also help in identifying natural versus synthetic diamond, which is important in the retail sale of the gems, and in the study of luminescence/fluorescence properties of diamonds, which may ultimately lead to more efficient processing methods.

Pipe Flow Test Rigs Installed at Key Lake Mill

SRC's Pipe Flow Technology Centre took its "show on the road" in 2003, setting up a pipeline test facility at mining company Cameco's Key Lake Mill.

Typically, SRC develops and tests technologies to transport fluids and slurries for the mining and mineral industry at its Saskatoon facility. However, without licensing SRC's Pipe Flow facility cannot test radioactive materials, only simulated uranium slurries could be tested. Rather than rebuilding the current Pipe Flow Technology Centre, testing at the licensed Key Lake site allows SRC and Cameco to carry out safe testing of slurry pipelining to identify appropriate technologies for transporting and storing mine wastes.

Once raw ore has been processed and the valuable yellow cake recovered, the waste portion, or tailings, must be dealt with. At this stage, the tailings are a mixture of solid particles dispersed in water, making it convenient to use a slurry pipeline to transport them to a management site for safe final storage.

In comparison with conventional oil, gas, or water pipelines, the operation of a slurry pipeline is a complex task. The velocity of the mixture flowing in a slurry line cannot be allowed to fall below a critical rate. If it does, the solids will start to settle out and there is a danger that the pipeline will plug. It is equally important that an upper limit be imposed on the pipeline's operating velocity to minimize pumping energy requirements and to reduce wear from particles scouring the pipe wall.

On-site testing allows Cameco and SRC to characterize slurries of various kinds, to specify the appropriate velocity, and to estimate the energy requirements, all in a safe, timely and efficient manner.

Getting Ready for the Synchrotron

The Canadian Light Source (CLS), Saskatoon's new synchrotron facility, is set to open in the fall of 2004. The CLS is widely considered to be Canada's most important science project and SRC is gearing up to make full use of the facility.

Together with partners such as the CLS, the University of Saskatchewan, the Alberta Synchrotron Institute (ASI), and the University of British Columbia, SRC is both collaborating on research areas of mutual interest and co-funding dedicated research associate positions to analyze and interpret specific materials of interest to the

mineral exploration, uranium, diamond, petroleum, potash and pipeline industries.

In collaboration with the CLS, SRC is now focusing on three principal synchrotron application development areas: mineral exploration (specifically uranium), diamond industry support, and micro-particle emission characterization.

In the uranium mineral exploration field, SRC researchers use synchrotron light to determine the characteristics and "pathfinder," or indicator, capabilities of various minerals that are key to locating new economic uranium deposits based on drill core samples from northern Saskatchewan exploration activities. This will help the Saskatchewan uranium exploration industry by adding innovative capabilities to their ongoing exploration programs.

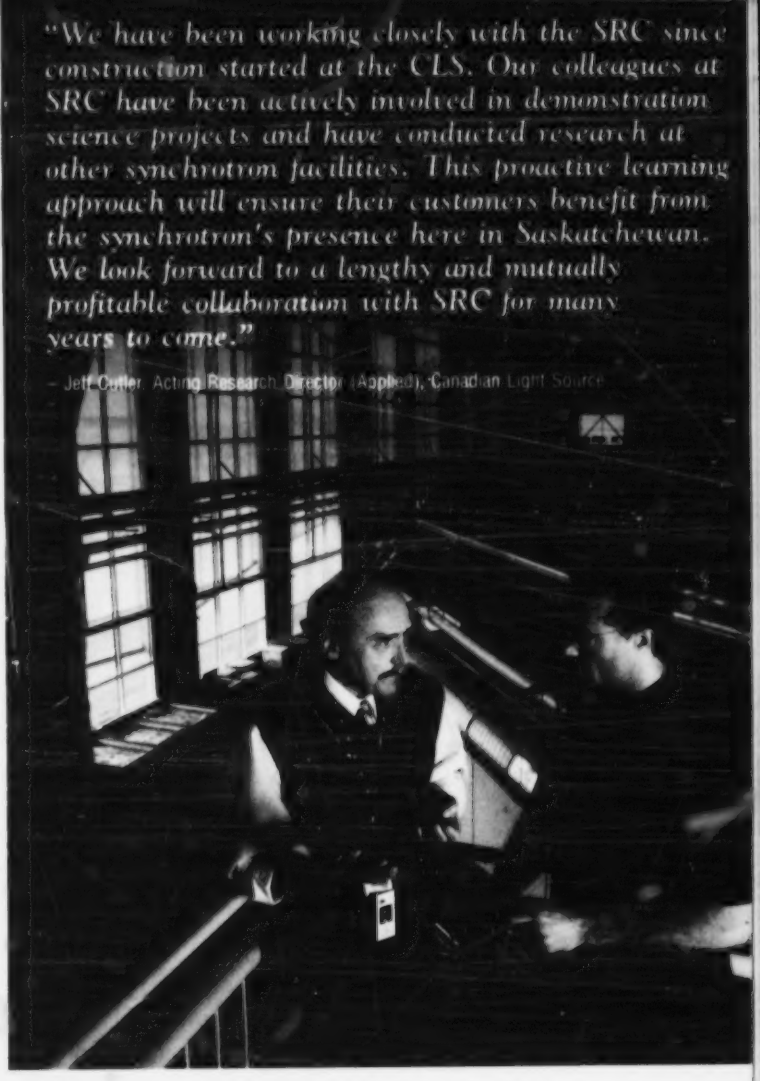
Synchrotron light is being used to support several areas of diamond industry development. The first area, distinguishing diamonds produced in Canada from those produced elsewhere in the world, particularly from conflict areas, has the potential to improve the market for Canadian diamonds. The second area, identifying natural versus synthetic diamonds, is important in retail gem sales and again has the potential to improve the market for Canadian diamonds. Other applications being developed based on the luminescence/fluorescence properties of diamonds may ultimately lead to more efficient mineral processing methods for this industry.

Together with partners SaskPower, Environment Canada, the U.S. Electric Power Research Institute (EPRI), and Saskatchewan Industry and Resources, SRC researchers are studying micro-particle emissions into our atmosphere, specifically the atmospheric release of mercury from coal burning power plants. This work is aimed at assisting in the development of improved emission reduction technologies, benefiting both the industry and our environment.

SRC's synchrotron development work to date has been conducted making use of existing synchrotrons in Illinois, Wisconsin, New York, England, and France. The construction of the new, and closer synchrotron in Saskatoon represents an unparalleled opportunity to advance our technology development. This will help build on Saskatchewan's existing world-class research and development capabilities and position our joint capabilities to serve a broad range of highly sophisticated clients.

"We have been working closely with the SRC since construction started at the CLS. Our colleagues at SRC have been actively involved in demonstration science projects and have conducted research at other synchrotron facilities. This proactive learning approach will ensure their customers benefit from the synchrotron's presence here in Saskatchewan. We look forward to a lengthy and mutually profitable collaboration with SRC for many years to come."

– Jeff Cutler, Acting Research Director (Applied), Canadian Light Source



Sustainability

Plan for Business Continuity/Resumption Formalized

As little as anyone wants to consider the possibility of an accident, fire or other disruption that could interrupt services, damage property or even threaten lives, such adverse events must be imagined, thought through, prepared for and ultimately recovered from.

In 2003-2004, SRC's risk management team broadened its strategy for dealing with emergencies by formalizing a Business Resumption Plan (BRP) designed to assist SRC to recover from a range of disruptive events.

"SRC's risk management strategy considers any event likely to negatively influence our ability to meet our legislated mandate and mission, or maintain our core values and objectives," comments Business Continuity Co-ordinator, Dave Arnott. "These events may range from something like a loss of data, a lengthy power outage or a water leak, to a disaster such as a major fire."

The BRP is designed to provide a co-ordinated and practiced response to adverse events and to enhance SRC's efforts in controlling impacts and recovering critical functions. It also details processes and principles for dealing with a number of key issues, such as communications, staff support, and emergency services.

SRC's policy and practice is to conduct its operations with the highest regard for the safety and occupational health of its employees and the public, and for the protection and preservation of property and the environment. The BRP is another step towards ensuring success in meeting these objectives. It also ensures minimal disruption to the services we provide to our customers and partners, thereby reducing some of their business risk.

Striving to be World Class in Health and Safety

SRC is committed to being a world-class organization in the areas of occupational health and safety.

"Our main continuous improvement objectives in the area of safety over the past year were to provide all staff with emergency response and hazard assessment training," says Kim Mann, SRC's Environmental, Health and Safety Coordinator. "We met both of these objectives. We are also striving to meet and exceed the minimum standards set out in Saskatchewan's regulations. Our focus over the next year will be completing hazard assessments, as well as documenting safe operating procedures."

These activities are consistent with SRC's safety objectives, which are to:

- Provide a safe and healthy workplace which meets or exceeds industry standards;
- Minimize or eliminate hazards which may result in personal injuries or illnesses, service interruption, fires or property damage; and
- Comply with all provincial and federal regulations applicable to SRC.

"In 2003-04, we researched best practices with a goal of developing a world class safety program," says Mann. "Discussions with senior management and line-management about where SRC wants to be in this area—and what we have to do to get there—led to the development of a vision statement, 'Safety and Occupational Health are the over-riding priorities for SRC.' This means SRC won't do a job unless we can do it safely."

Technology-in-Action Awards Programs

From the time of the pioneer settlers, Saskatchewan people have been recognized as innovative, adaptive and practical—attributes that continue to form the basis of successful ventures today.

The Technology-in-Action (TIA) Fund, a perpetual memorial fund recognizing these attributes, was established by the families of Ian and Pearl Wahn to honour their parents and grandparents, who were Saskatchewan pioneers. Its purpose is to help Saskatchewan people develop the province as a highly skilled, fair, desirable and compassionate society with a secure environment. SRC oversees the fund.

"SRC has formed two partnerships to enhance the TIA awards and increase their recognition," comments Wanda Brown, SRC's Corporate Relations Manager.

"We worked with the Saskatchewan Chamber of Commerce ABEX Awards, which recognize outstanding achievements in business excellence, to establish a $10,000 gift as part of an award in the program now called the 'TIA New Saskatchewan Product Award.' It will go to the business demonstrating exceptional performance in launching a new Saskatchewan-made product, technology, or service that is original and has good commercial potential. As the only award with a cash prize, many consider it the most prestigious of the ABEX awards."

SRC has also partnered with the Rotary Clubs of Saskatchewan to provide two $5,000 scholarships for youth. The awards will be provided through "Your Future is Here – Saskatchewan", an initiative to encourage young people to build their careers in the province.

"The scholastic bursaries are provided in agriculture, engineering, computer science or technology," says Brown. "Applicants are asked to describe their career aspirations in Saskatchewan and how they see their education and career benefiting the province. They must be students who have developed or are developing a new product that will benefit the province by applying innovative scientific or technical solutions."

TIA is aimed at students, small and medium-sized businesses, farmers, rural communities and natural resource development. Donations to the fund are accepted from private and public organizations, individuals and families who wish to contribute a lasting legacy for the people of Saskatchewan.

Ian Wahn

Corporate Governance

Authority

The Saskatchewan Research Council (SRC) is a Treasury Board crown corporation governed by *The Research Council Act*. Within this framework, the Board formulates policy and delegates the responsibility and authority for the ongoing management of the corporation to the President & CEO.

Board Responsibilities

The Board ensures that the activities of the corporation are carried out under the terms of *The Research Council Act*. The Board oversees the stewardship of the corporation by accepting responsibility for strategic planning, financial management and monitoring business performance. The Board ensures that management has systems in place to identify and manage the principal risks of the corporation's business.

Board Composition And Compensation

The SRC Board is comprised of ten members with a diverse combination of knowledge and expertise including scientific, legal, management, financial and public relations skills. The members represent a cross-section of SRC's stakeholder community including individuals from business, industry, the public sector and academic institutions.

Nine directors, including the Chair, are independent of SRC management. The one related director is the President & CEO of the corporation.

Board members (except for members who are government employees) receive an honorarium for meetings attended. The level of compensation is established by Treasury Board. Members are allowed travel and associated expenses at SRC approved rates.

The Board And Management

The Board focuses on the strategic leadership of the corporation and does not become involved in day-to-day management, but delegates and entrusts operational decisions to senior management, holding senior management accountable for the company's performance, its long-term viability and the achievement of its objectives.

Committees

The Board of Directors has established the following committees to address specific areas of Board responsibility:

Audit/Finance Committee

The Audit/Finance Committee is responsible for monitoring, advising and making recommendations to the Board regarding all aspects of financial planning and the financial management of the organization. The Audit/Finance Committee acts as the communication link between the Board of Directors and the Provincial Auditor.

Governance Committee

The Governance Committee is responsible for monitoring, advising and making recommendations to the Board regarding the governance strategy of the corporation, assessing and evaluating Board and CEO performance, administering the Board-CEO relationship and monitoring and assessing risk within the corporation.

Board Orientation And Training

New directors appointed to the Board receive a Board of Directors' Briefing Book and attend an orientation session delivered by senior management and the Chair of the Board. The orientation session includes an overview of the corporation including mandate and mission, governance structure, partnerships, competition issues, 5-year strategic plan, financial/operational plan, SRC's strategic sectors and strategic approach, risk management strategy, communication strategies and economic impact assessment. A tour of SRC's facilities is provided to introduce new directors to SRC's operations.

Report of Management
Year Ended March 31, 2004

The accompanying financial statements are the responsibility of the management of the Saskatchewan Research Council. They have been prepared in accordance with Canadian generally accepted accounting principles, using management's best estimates and judgements, where appropriate.

Management is responsible for the reliability and integrity of the financial statements, the notes to the financial statements, and other financial information contained in this report. Management is also responsible for maintaining a system of internal controls, policies and procedures designed to provide reasonable assurance that assets are safeguarded and that accounting systems provide timely, accurate and reliable financial information.

The Board of Directors is responsible for ensuring that management fulfills its responsibilities for financial reporting and internal control. The Board is assisted in exercising its responsibilities through the Audit/Finance Committee, which is composed of five non-management directors and one management director. The Committee meets periodically with management to satisfy itself that management's responsibilities are properly discharged, to review the financial statements and to recommend approval of the financial statements to the Board.

The Provincial Auditor of Saskatchewan has audited the Council's financial statements in accordance with Canadian generally accepted auditing standards and his report follows.

Laurier Schramm
President and CEO

Crystal Smudy, CA
Chief Financial Officer

Consolidated Financial Statements
Year Ended March 31, 2004

Auditor's Report

To the Members of the Legislative Assembly of Saskatchewan.

I have audited the consolidated balance sheet of the Saskatchewan Research Council as at March 31, 2004 and the consolidated statements of operations and retained earnings and cash flows for the year then ended. The Council's management is responsible for preparing these financial statements for Treasury Board's approval. My responsibility is to express an opinion on these financial statements based on my audit.

I conducted my audit in accordance with Canadian generally accepted auditing standards. Those standards require that I plan and perform an audit to obtain reasonable assurance whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation.

In my opinion, these consolidated financial statements, present fairly, in all material respects, the financial position of the Council as at March 31, 2004 and the results of its operations and its cash flows for the year then ended in accordance with Canadian generally accepted accounting principles.

Regina, Saskatchewan
May 13, 2004

Fred Wendel, CMA, CA
Provincial Auditor

CONSOLIDATED BALANCE SHEET

As At March 31

(Thousands of dollars)

STATEMENT 1

	2004	2003
ASSETS		
Current assets:		
Cash (Note 6)	$ 194	$ 189
Accounts receivable	4,101	2,437
Prepaid expenses	501	467
	4,796	3,093
Non-current assets:		
Accrued benefit asset (liability) (Note 3)	59	(52)
Restricted investment (Note 4)	518	405
Property, plant and equipment (Note 5)	6,326	6,832
	$ 11,699	$ 10,278
LIABILITIES AND PROVINCE'S EQUITY		
Current liabilities:		
Accounts payable	$ 905	$ 1,216
Unearned revenue	1,560	1,307
Deferred revenue (Note 7)	399	399
Salaries and wages payable	844	353
Vacation payable	91	70
	3,799	3,345
Non-current liabilities:		
Sick leave benefits payable	293	315
Accrual for decommissioning (Note 8)	1,358	1,210
Deferred revenue (Note 7)	1,255	1,655
	6,705	6,525
Province's equity:		
Contributed surplus	922	922
Retained earnings - unappropriated (Statement 2)	3,554	2,426
Retained earnings - appropriated (Note 4)	518	405
	4,994	3,753
	$ 11,699	$ 10,278

(See accompanying notes to the financial statements)

CONSOLIDATED STATEMENT OF OPERATIONS AND RETAINED EARNINGS

Year Ended March 31

(Thousands of dollars)

STATEMENT 2

	2004 (Note 13)	2003 (Note 13)
Revenue:		
Contracts	$ 16,063	$ 13,338
Grant - General Revenue Fund	7,877	7,714
Grant - Agri-Food Innovation Fund (Note 7)	399	399
Interest revenue	57	59
Change in restricted investment (Note 4)	113	(128)
	24,509	21,382
Expenses:		
Salaries and benefits	11,846	10,472
Supplies and services	5,389	4,956
Accommodation charges	4,410	4,270
Amortization of property, plant and equipment	1,335	1,247
Amortization of Agri-Food Innovation Fund funded assets (Note 7)	399	399
	23,379	21,344
Net income from operations	1,130	38
Defined benefit pension plan revenue (expense) (Note 3)	111	(540)
Net income (loss)	1,241	(502)
Retained earnings - unappropriated, beginning of year	2,426	2,800
Change in appropriated amount during year (Note 4)	(113)	128
Retained earnings - unappropriated, end of year - to Statement 1	$ 3,554	$ 2,426

(See accompanying notes to the financial statements)

CONSOLIDATED STATEMENT OF CASH FLOWS

Year Ended March 31

(Thousands of dollars)

STATEMENT 3

	2004	2003
Cash flows from operating activities:		
Cash receipts from contracts	$ 14,489	$ 13,572
Cash receipts from General Revenue Fund	7,964	7,714
Cash paid to suppliers and employees	(21,217)	(19,118)
Interest received	57	59
Cash flows from operating activities	1,293	2,227
Cash flows from investing:		
Purchase of property, plant and equipment	(1,288)	(1,316)
Proceeds from sale of property, plant and equipment	0	202
Cash flows used in investment activities	(1,288)	(1,114)
Net increase in cash position	5	1,113
Cash beginning of year	189	(924)
Cash end of year	$ 194	$ 189

(See accompanying notes to the financial statements)

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
March 31, 2004

1. Status of Saskatchewan Research Council

Saskatchewan Research Council ("the Council") was established pursuant to Section 3 of *The Research Council Act* for the purpose of research and investigation in the fields of the physical sciences, pure and applied, as they affect the economy of the Province of Saskatchewan. The Council is a body corporate which receives monies appropriated by the Legislature for these purposes. It is also empowered to conduct research under contract for others and to receive financial assistance pursuant to agreements with other similar agencies.

2. Summary of Accounting Policies

The financial statements are prepared in accordance with Canadian generally accepted accounting principles. The following accounting principles are considered to be significant:

a) Consolidation Principles and Basis of Presentation

The accounts of TecMark International Commercialization Inc., a wholly owned subsidiary of the Saskatchewan Research Council, are consolidated in these financial statements.

The Council's proportionate share of the assets, liabilities, revenues, expenses and cash flows of a joint venture with Bova-Can Parentage Testing Inc. are included in these financial statements.

b) Accrual Basis

The financial statements are prepared on the accrual basis of accounting.

c) Use of Estimates

The preparation of financial statements in conformity with generally accepted accounting principles in Canada requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

d) Revenue Recognition

Revenue from contract work is recognized on the percentage-of-completion method, which recognizes revenue as a contract progresses.

2. Summary of Accounting Policies (Continued)

Unbilled revenues are accrued to the year-end for these contracts, while pre-billed revenues received are classified as unearned revenue.

Grants from the General Revenue Fund are unrestricted in nature and recognized as they are received or receivable.

Other contributions that are restricted for a specified use are deferred and are recognized as revenue when the related expenses are incurred.

Agri-Food Innovation Fund (AFIF) revenue is recognized at the same rate as the related assets are put in use and amortized.

e) Property, Plant and Equipment

The assets of the Council are initially recorded at cost, including labour, material and overhead for self-constructed assets.

Amortization of property, plant and equipment is provided over the estimated useful lives of the assets on the following basis:

i) Sum-of-the-years'-digits method	
Buildings	20 years
Equipment	5-10 years
ii) Declining balance method	
Automotive	33 1/3%
iii) Straight-line	
Goodwill	5 years
Leaseholds	1-9 years
Fermentation and GenServe Equipment	10 years

f) Accrued Vacation Credits

The costs associated with vacation credits are recognized when the vacation entitlements are earned. The value of credits earned to the year-end but not taken is reflected as a liability.

2. Summary of Accounting Policies (Continued)

g) Sick Leave Benefits

The Council allowed employees to accumulate 10% of their unused sick leave credits earned to March 31, 1998. The costs associated with these sick leave benefits was recognized when the benefits were earned.

The practice of paying out sick leave credits ceased effective April 1, 1998. Upon termination of employment the Council pays out 10% of the accumulated unused sick leave credits to March 31, 1998, based on the wage rate in effect at March 31, 1998.

h) Accrual for Decommissioning

The Council accrues the liability for future decommissioning and site restoration costs when the likelihood of incidence is established and such costs can be reasonably determined. Annual provisions for estimated future asset decommissioning and site restoration costs, less any residual or salvage value, are charged to Supplies and services expense over the remaining service lives of the related assets. These cost estimates are revised periodically in accordance with changes in the assumptions and estimates underlying the calculations, with changes in technology, with experience arising from the decommissioning of assets, and with changes in applicable legislation and regulations.

i) Restricted Investment

The investment is comprised of deposits in units in a balanced mutual fund managed by a professional investment manager. The balanced mutual fund has no fixed interest rate, and the return is based on the performance of the fund. Additional units in the mutual fund are acquired when distributions are made by the fund. Cash dividends are not paid by the fund; however, investors can realize changes in the underlying unit values by redeeming units.

Units in the mutual fund are recorded in the accounts at their net asset value per unit. Net asset value per unit is the market value of the investments in the fund portfolio divided by the total number of outstanding units in that fund. The adjustment necessary to record units at their net asset value at the year-end is shown as a change in restricted investment on the Consolidated statement of operations and retained earnings.

3. Accrued Benefit Asset (Liability) - Pension Plan

The Council maintains a pension plan for its employees. Until December 31, 1990, it was a defined benefit plan. Effective January 1, 1991, the plan was changed to a defined contribution plan. The changes do not affect existing pensioners who will continue to receive benefits as granted. The latest actuarial valuation was updated as at January 1, 2004. The pension plan has been valued using management's best estimates.

The defined contribution plan had a market value of $16,925,000 (2002 - $15,874,000) at December 31, 2003. The value of the defined contribution plan assets and liabilities has not been extrapolated from December 31 to March 31. By design, the liabilities will always equal the assets of a defined contribution plan.

The defined benefit asset and obligation have been extrapolated from the January 1 actuarial valuation to March 31. The financial position of the defined benefit plan is as follows:

	2004 (000's)	2003 (000's)
Defined benefit asset at market value, January 1	$ 2,709	$ 2,659
Net change in asset value	(39)	(50)
Asset value, extrapolated to March 31	2,670	2,609
Defined benefit obligation at January 1	2,508	2,704
Net change in obligation	103	(43)
Obligation, extrapolated to March 31	2,611	2,661
Accrued benefit asset (liability), March 31	$ 59	$ (52)

Upon termination of the Plan, any accrued benefit asset of the Pension Fund remaining, after discharging all liabilities, shall belong to the Council. The accrued benefit asset may be distributed in a manner to be determined by the Council, at its sole discretion, after receiving prior approval in accordance with *The Pension Benefits Act, 1992*, the *Income Tax Act (Canada)* and the regulations thereunder.

The defined benefit pension plan revenue of $111,000 (2003 expense - $540,000) is the year over year change in the accrued benefit asset and obligation. The defined contribution pension plan expense (employer contributions) for the year was $517,000 (2003 - $491,000). The benefits paid from the defined benefit pension plan during the year were $311,000 (2003 - $334,000). Effective January 1, 2003 the Council is not requesting reimbursement for administrative costs incurred by the pension plan from plan assets for an indefinite period of time.

4. Restricted Investment

Restricted investment represents the Technology in Action Fund ("Fund"), which was established by the Council in 1994 when Mr. Ian Wahn made a gift to the Council, an agent of the Crown. The Fund was established to help the people of Saskatchewan develop their province as a highly skilled, fair, desirable and compassionate society with a secure environment through research, development and the transfer of innovative scientific and technological solutions, applications and services. The Council received a binding ruling from the Canada Revenue Agency that accepts this as a "Gift to the Crown".

The Council maintains a separate account for the capital contributions and all investment income earned.

The balance of the fund at March 31 is as follows:

	2004 (000's)	Change (000's)	2003 (000's)
Capital contributions	$ 504	$ 0	$ 504
Investment (losses) earnings	106	118	(12)
Technology grants	(92)	(5)	(87)
Total	$ 518	$ 113	$ 405

The investment losses/earnings includes the actual earnings of the investment and the year over year change in the market value of the assets.

5. Property, Plant and Equipment

	2004			2003
	Cost	Accumulated Amortization	Net Book Value	Net Book Value
	(000's)	(000's)	(000's)	(000's)
Buildings	$ 601	$ 343	$ 258	$ 302
Leaseholds	3,924	2,446	1,478	1,830
Equipment	16,530	13,631	2,899	2,633
Automotive	186	160	26	2
Fermentation Facility	3,370	1,997	1,373	1,716
GenServe Equipment	562	281	281	338
Land	11	0	11	11
	$ 25,184	$ 18,858	$ 6,326	$ 6,832

Included in the cost and net book value of equipment, is $20,000 (2003 - $0) of assets that were not amortized because they were not ready for use.

6. Bank Indebtedness

The Council was authorized by the Minister of Finance to establish a line of credit not to exceed $5,100,000. There is an assignment of the accounts receivable as collateral for bank indebtedness. Interest is charged on the line of credit at the Bank of Montreal prime rate.

7. Deferred Revenue – GenServe Equipment and Fermentation Facility

The Council received contributions for certain property, plant and equipment, which it records as deferred revenue until such time as the related assets are put in use and amortized.

The total amount of deferred revenue is $1,654,000 (2003 - $2,054,000). During the year the Council recorded $399,000 (GenServe $56,000 and Fermentation $343,000; 2003 - $56,000 and $343,000 respectively) as revenue based on the amortization of the related property, plant and equipment.

The long-term portion, $1,255,000 (GenServe $225,000 and Fermentation $1,030,000; 2003 - $281,000 and $1,374,000 respectively), represents AFIF monies used to purchase property, plant and equipment that will be recognized as revenue at the same rate that the related assets are amortized.

8. Accrual for Decommissioning

The Canadian Nuclear Safety Commission (CNSC) licensing conditions require that SLOWPOKE reactor owners have in place a decommissioning plan and a financial plan to cover the associated costs.

The Council estimates decommissioning costs will be in the range of $1,540,000 to $1,850,000 (2003 - $1,540,000 to $1,850,000).

In the Council's best estimate, the revised costs of decommissioning will be close to the high end of the range. As at March 31, 2004, $1,358,000 (2003 - $1,210,000) was accrued for decommissioning costs. The current year amount of $148,000 is included in Supplies and services expense.

9. TecMark Inc.

TecMark International Commercialization Inc. ("TecMark") was incorporated under *The Business Corporations Act* (Saskatchewan) on October 9, 1996, as a wholly owned subsidiary of the Council. The purpose of the Corporation is to assist in the commercialization of technology for inventors, entrepreneurs and partner institutions in the Province of Saskatchewan.

Supplies and services includes $323,963 (2003 - $194,985) in connection with projects undertaken by TecMark.

10. Office of Energy Conservation

The Office of Energy Conservation (OEC) is a part of the Council. It is headed by the Director of the OEC who is an employee of the Council. The mandate of the OEC is to develop and implement cost-effective energy conservation initiatives, including public information demonstrations of energy conservation measures and encourage voluntary action by public and industry. The OEC is guided by a Steering Committee that is comprised of representatives from but not limited to Saskatchewan Power Corporation (SaskPower), SaskEnergy Incorporated, Crown Investments Corporation of Saskatchewan, Department of Industry and Resources (IR), and Department of Environment. Funding is provided by IR, SaskPower, and SaskEnergy. During the year the OEC earned revenue of $0.55 million (2003 - $0.18 million) and incurred expenses of $0.55 million (2003 - $0.18 million).

11. Joint Venture

Effective February 1, 1997, the Council entered into a 50 percent ownership joint venture with Bova-Can Parentage Testing Inc. The agreement was renewed June 1, 2001 for an additional five years. The agreement provides Bova-Can Laboratories with access to all animal lists and history, and the genotyping market. Upon termination of this agreement, the Council agrees to provide to each breed association, upon request, a copy of their complete database of genotypes, and access to, and control over, samples from the DNA bank. The Council and Bova-Can Parentage Testing Inc. will each receive 50% of the net assets.

The Council's pro-rata share of its interest in the joint venture is as follows:

	2004 ($000's)	2003 ($000's)
Current assets	$ 204	$ 216
Long-term assets	26	24
Current liabilities	24	27
Long-term liabilities	6	6
Revenue	442	551
Expenses	450	510
Net (loss) income	(8)	41
Cash flows resulting from operating activities	23	51
Cash flows resulting from investing activities	(17)	(9)

12. Related Party Transactions

Included in these financial statements are transactions with various Saskatchewan Crown corporations, departments, agencies, boards and commissions related to the Council by virtue of common control by the Government of Saskatchewan and non-Crown corporations and enterprises subject to joint control or significant influence by the Government of Saskatchewan (collectively referred to as "related parties").

Routine operating transactions with related parties are settled at prevailing market prices under normal trade terms except for the following:

During the year, the Council paid $4.0 million (2003 - $3.8 million) to the Saskatchewan Property Management Corporation (SPMC) and Saskatchewan Opportunities Corporation (SOCO) for accommodation charges on buildings. At year-end, the Council has lease commitments with SOCO requiring minimum lease payments of:

2005	$1.0 million
2006	0.2 million

In 2004, the Council purchased supplies and services for $1.0 million (2003 - $1.1 million) from related parties.

During the year, the Council entered into fee-for-service contracts for $2.0 million (2003 - $1.6 million) with related parties, of which $0.3 million (2003 - $0.6 million) remains in accounts receivable as at March 31. The Council has $1.6 million (2003 - $2.0 million) of deferred revenue from related parties as at March 31. Of the $1.6 million, $1.3 million (2003 - $1.7 million) is related to the Fermentation Facility's funding from AFIF and $0.3 million (2003 - $0.3 million) is related to the GenServe funding from AFIF.

During the year, the Council provided general administrative services to the Saskatchewan Research Council Employees' Pension Plan without charge.

Other transactions with related parties and amounts due to/from them are described separately in the financial statements and the notes thereto.

13. Comparison of Planned and Actual Results

A comparison of actual to budgeted results for each line item on the income statement follows:

	Actual 2004 (000's)	Budget 2004 (000's)	Actual 2003 (000's)	Budget 2003 (000's)
Revenue:				
Contracts	$ 16,063	$ 17,347	$ 13,338	$ 15,206
Grant - General Revenue Fund	7,877	7,714	7,714	7,871
Grants - AFIF	399	399	399	399
Interest revenue	57	50	59	55
Change in restricted investment	113	0	(128)	0
	24,509	25,510	21,382	23,531
Expenses:				
Salaries and benefits	11,846	11,485	10,472	10,653
Supplies and services	5,389	7,837	4,956	6,670
Accomodation charges	4,410	4,557	4,270	4,415
Amortization of property, plant and equipment	1,335	1,000	1,247	1,231
Amortization of AFIF funded assets	399	399	399	399
	23,379	25,278	21,344	23,368
Net income from operations	1,130	232	38	163
Defined benefit pension plan revenue (expense)	111	0	(540)	0
Net income (loss)	$ 1,241	$ 232	$ (502)	$ 163

14. Expenses by Program

Program	Actual 2004 (000's)	Budget 2004 (000's)	Actual 2003 (000's)	Budget 2003 (000's)
Research & Technology	$ 15,696	$ 16,958	$ 14,839	$ 16,074
Laboratory Services	7,683	8,320	6,505	7,294
Total	$ 23,379	$ 25,278	$ 21,344	$ 23,368

Administrative services have been allocated to each program based on a percentage of labour. Space costs have been allocated to each program based on the approximate square footage occupied.

15. Financial Instruments

The Council's significant financial instruments consist of accounts receivable, accounts payable, other payables and the restricted investment.

Credit Risk:

The Council is exposed to credit risk from the potential default of customers. However, the majority of the Council's receivables are from related parties, other government agencies and reputable, longstanding corporate clients. Therefore the credit risk is minimal.

Fair Values:

The fair values of the accounts receivable, accounts payable and other payables approximate their carrying value due to the short-term nature of these instruments. The fair value of the restricted investment is considered to be market value, the calculation of which is detailed in Note 2.

16. Comparative Figures

Certain of the 2003 financial statement balances have been reclassified to conform with presentation of the 2004 figures.

At SRC we value Integrity, Teamwork, Performance Excellence, and Learning

Integrity

- We treat people with respect, fairness, honesty, patience, understanding and trust.
- We are an equal opportunity employer and respect diversity.
- We are a responsible corporate citizen committed to the health and safety of people and the environment.
- We practice high ethical and professional standards.

Teamwork

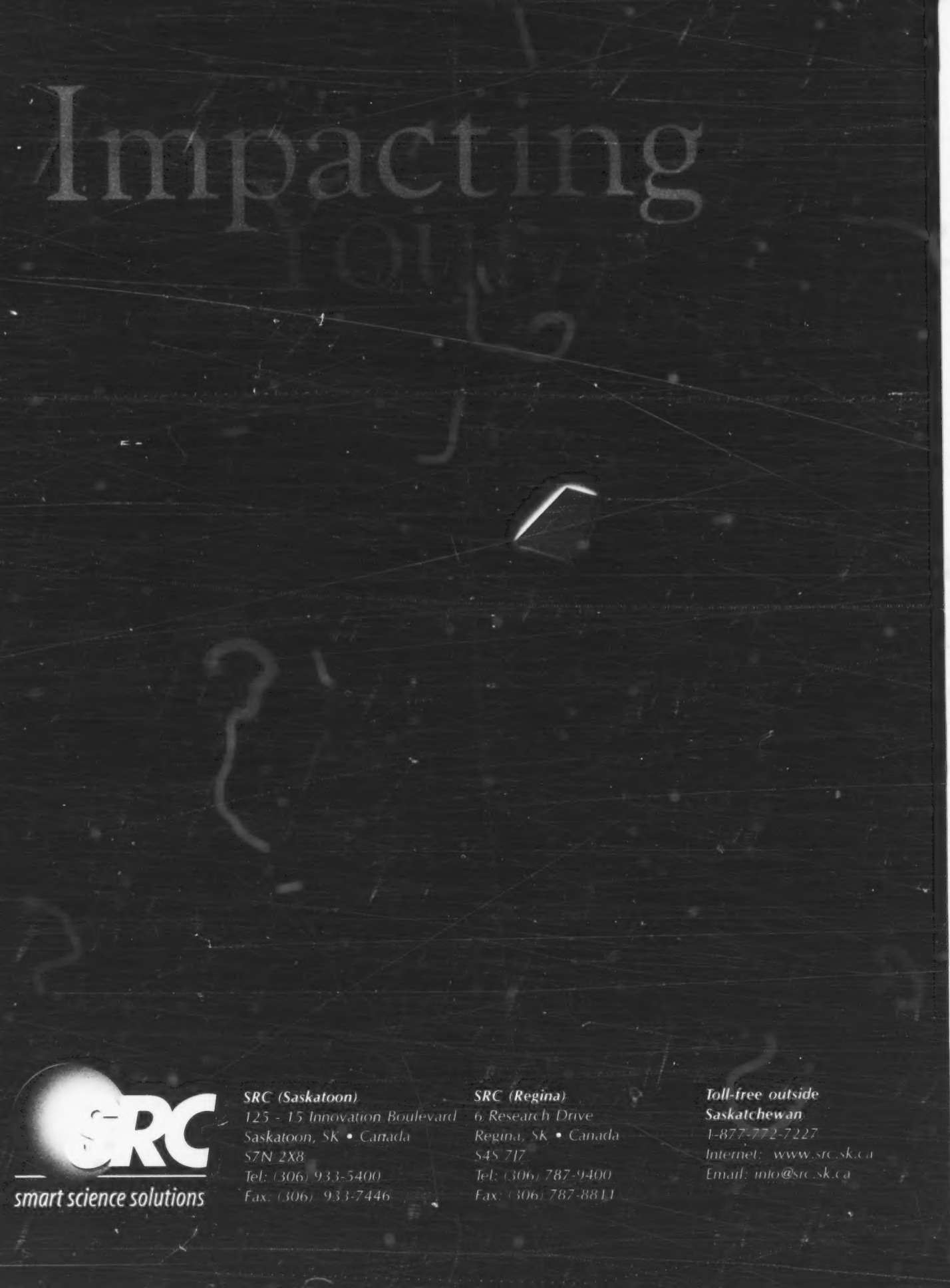
- We are committed to achieving common goals through teamwork.
- We collaborate, listen and share information within SRC and with our partners.
- We consistently present a total corporate image.
- We participate actively within our networks to the benefit of clients, colleagues and the community.

Performance Excellence

- We are a financially responsible organization.
- We lead by example. We are accountable for our actions, successes and failures.
- We establish and communicate clear expectations to staff, clients and partners.
- We recognize the accomplishments of our colleagues and of the organization as a whole.
- We actively seek new clients, and strive to retain existing clients.
- We demonstrate our commitment to clients by keeping lines of communication open, providing quality products and services and delivering on time and within budget.

Learning

- We facilitate and acknowledge personal and professional growth.
- We strive to achieve excellence through innovation and continuous improvement.
- We develop or acquire appropriate knowledge as needed to achieve the best solutions for our clients and partners.
- We learn from our successes and our failures.



SRC
smart science solutions

SRC (Saskatoon)
125 - 15 Innovation Boulevard
Saskatoon, SK • Canada
S7N 2X8
Tel: (306) 933-5400
Fax: (306) 933-7446

SRC (Regina)
6 Research Drive
Regina, SK • Canada
S4S 7J7
Tel: (306) 787-9400
Fax: (306) 787-8811

Toll-free outside Saskatchewan
1-877-772-7227
Internet: www.src.sk.ca
Email: info@src.sk.ca

Saskatchewan Research Council

2003-2004 Annual Report

Supplementary Information

(unaudited)

Details of Revenue and Expense

Saskatchewan Research Council (Vote 35)

Mission Statement
The Saskatchewan Research Council's (SRC) mission is to help the people of Saskatchewan strengthen the economy with quality jobs and a secure environment. We do it through research, development and the transfer of innovative scientific and technological solutions, applications and services.

SRC creates wealth through the responsible application of science and technology to assist Saskatchewan industry to be globally competitive.

Year ended March 31		**2004**
Transfers		
All expenses paid from this vote were transfers to the Saskatchewan Research Council.		
Saskatchewan Research Council		
(Vote 35)		
This program provides funding for the Saskatchewan Research Council		
Revenue:		
Contracts		$ 16,063,255
Grants - General Revenue Fund		7,877,365
Grants - Agri-Food Innovation Fund		399,483
Interest revenue		56,969
Change in restricted investment		112,522
		24,509,594
Expense:		
Personal services	11,846,063	
Travel	610,125	
Transfers	0	
Supplier payments	4,778,874	
Purchase of capital assets	1,335,000	
Amortization of Agri-Food Innovation Fund assests	399,483	
Accommodation charges	4,409,621	23,379,166
Net income from operations		1,130,428
Defined benefit pension plan revenue		111,000
Net income		1,241,428
Retained earnings - unappropriated, beginning of year		2,426,000
Change in appropriated amount during year		(113,000)
Retained earnings - unappropriated, end of year		$ 3,554,428

Details of expenses

Personal Services

Unaudited list of individuals who received payments for salaries, wages, honorariums, etc. which total $50,000 or more. Includes all severance costs paid to individuals and salaries payable as at March 31, 2004.

Annesley, I.	70,983	Ranganathan, R.	106,935
Arnold, T.	99,035	Robinson, J.	68,984
Begrand, R.	51,867	Rollins, M.	81,283
Brown, G.	96,784	Savostianik, M.	56,249
Brown, W.	80,378	Sayegh, S.	91,806
Chorney, D.	61,456	Schergevitch, P.	59,148
Chrusch, L.	60,566	Schramm, L.	169,100
Dick, R.	64,112	Seymour, B.	51,242
Dumont, R.	86,277	Shewchuk, S.	89,219
Evans, V.	51,235	Simpson, M.	62,949
Exelby, D.	58,681	Smith, B.	50,387
Freitag, N.	76,251	Smudy, C.	128,576
Gartner, B.	61,965	Snodgrass, L.	54,513
Gillies, R.	91,340	Soveran, D.	90,109
Godwin, R.	50,962	Stanek, B.	74,540
Grier, D.	104,150	Sulatisky, M.	94,748
Hill, S.	74,370	Sun, R.	54,755
Holsten, A.	80,505	Thorpe, J.	77,990
Huang, S.	92,441	Wallace, K.	80,898
Hutchence, K.	76,242	Weekes, M.	109,286
Jackson, A.	54,521	Wheaton, E.	80,462
Jackson, C.	56,349	Wittrock, V.	53,144
Jahren, R.	57,125	Young, K.	83,434
Jamieson, P.	90,382	Yuen, W.	89,611
Jaworski, E.	53,613	Zhang, Y.	60,146
Johnston, M.H.	80,628	Zimmer, J.	58,427
Jones, J.	59,615	Zlipko, D.	50,834
Judd-Henrey, I.	71,612	Bova-Can adjustment	(183,311)
Kaminski, T.	70,557	Under $50,000	4,812,580
Ketterer, T.	64,500	Total personal services	10,351,508
Kristoff, B.	89,487	Federal payroll and pension plan remittances	1,494,554
Kurucz, L.	55,558		$ 11,846,063
Lang, K.	51,995		
Litzenberger, C.	55,119		
Lung, B.	62,955	**Travel**	
Lychak, J.	53,679	Minister's Travel	$ 789
Maathuis, H.	89,245	Other	614,368
Madore, C.	51,180	Bova-Can adjustment	(5,032)
Makohon, J.	65,291		$ 610,125
McKibben, M.	54,402		
McVicar, G.	86,692		
Melville, G.	74,448	**Transfers**	
Moody, M.	53,029	Unaudited list of transfers to external parties, excluding	
Moser, P.	54,521	administrative expenditures which are included under	
Murray, C.	89,997	personal services, travel and supplier payments.	
Nicolichuk, N.	53,679	Nil	$ -
Owens, K.	103,307		
Pappas, E.	103,512		
Perron, G.	53,943		
Plante, Y.	81,283		
Quirt, D.	61,640		

Supplier Payments

Unaudited list of payees who received $50,000 or more for the provision of goods and services, including office supplies and contracts.

Acutec (flow-through payments)	84,633
Advanced Datasystems	212,195
Anachemia Science	111,666
Andrews & Sons Drilling	60,762
Applied Biosystems	96,761
BOC Gases	76,712
Cleartech	130,373
Clevor Technologies (flow-through payments)	201,237
Fisher Scientific	74,435
G. Kocdag & Associates	69,360
Jaron Services	58,040
Komex International	60,280
Marsh Canada	89,320
Newalta	77,283
SaskTel	176,462
University of Saskatchewan	132,381
VWR International	60,731
Western Ag Innovations (flow-through payments)	81,833
Bova-Can adjustment	(147,414)
Under $50,000	3,071,824
	$ 4,778,874

Purchase of Capital Assets Payments

Unaudited list of payees who received $50,000 or more for the purchase of capital assets.

Agilent Technologies Canada	61,979
Dell Computer Corporation	69,003
K Prime Technologies	124,023
Labtrader Scientific Equipment	135,923
Perkin Elmer Canada	119,506
Thermo Instruments Canada	126,966
Bova-Can adjustment	(17,192)
Difference between cash purchases and amortization of capital assets	46,276
Under $50,000	668,516
	$ 1,335,000

Accommodation charges

Unaudited list of payees who received $50,000 or more for the lease and maintenance of facilities.

North Star Innovative Developments	98,873
Saskatchewan Property Management Corp.	643,473
Saskatchewan Opportunities Corp.	3,513,881
Under $50,000	153,394
	$ 4,409,621